UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
NORTON, JENNIFER L

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/766,003	MOSS, ANDREW J.
	Examiner	Art Unit
	Jennifer L. Norton	2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/13/06</u>

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   The following is a **Final Office Action** in response to the Amendment received

on 15 May 2006. Claims 1-16 are pending in this application.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   Claims 1-3, 5, 7-9, 11 and 13-16 are rejected under 35 U.S.C. 102(b) as being

anticipated by U.S. Patent No.: 3,856,034 (hereinafter Itoh).

4.   As per claim 1, Itoh discloses a control system for supplying a control signal to a

controlled apparatus the system comprising:

an error generation means (Fig. 1, element 6) operable to produce an error

signal (col. 3, lines 20-27 and Fig. 1, element x sub. $s - x$) from a feedback value (col.

3, lines 20-24 and Fig. 1, element 5) relating to a measured operating parameter (col.

3, lines 20-24 and Fig. 1, element 4 and x) of a controlled apparatus (col. 1, lines 14-

18), and a required value (col. 3, lines 24-27 and Fig. 1, element x sub. s) relating to a

desired operating parameter value of the controlled apparatus (col. 1, lines 14-23 and

col. 3, lines 24-27); and

a controller (Fig. 1, element 1) operable to receive the error signal (col. 3, lines

8-10 and Fig. 1, element x sub. s - x and a gain signal (col. 3, lines 8-10, col. 5, lines

33-37 and col. 6, lines 4-9), and to output a control signal in dependence upon the

values thereof (col. 3, lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9),

wherein a gain selection means (col. 3, lines 8-10, col. 5, lines 1-4 and Fig. 1, element

1; the gain selection means is incorporated in the controller, hence the controller

receives the error signal from Fig. 1, element 6 and the gain signal from the controller

via the controller) is provided, which gain selection means (Fig. 1, element 1) is

operable to receive the error signal (col. 3, lines 8-10 and Fig. 1, element x sub. s - x)

and to output a gain signal (col. 3, lines 8-10, col. 5, lines 1-4 and 33-37 and col. 6,

lines 4-9) to the controller (Fig. 1, element 1; the gain selection means is incorporated

in the controller, hence the controller receives the error signal from Fig. 1, element 6

and the gain signal from the controller via the controller) in dependence upon the value

of the error signal (col. 3, lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9).

The examiner emphasizes that all anticipated components and limitations of

claim 1 are present in Itoh. The controller is operable to receive the error signal (via

Fig. 1, element 6) and gain signal (via the controller) to output a control signal (col. 3,

lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9). The controller via the

controller receives the gain signal in dependence upon the error signal, in which the

two signals (error and gain) are combined to represent the control signal (col. 2, lines

12-24, col. 3, lines 8-67, col. 4, lines 1-6 and col. 5, lines 1-4).

5.   As per claim 2, Itoh discloses the controller (Fig. 1, element 1) is operable to

output a signal equivalent to the error signal multiplied by the gain signal (col. 3-4,

equations 1-7).

6.   As per claim 3, Itoh discloses a system wherein the error signal (Fig. 1, element

x sub. s - x) equals the difference between the required value (Fig. 1, element x sub. s)

and the feedback value (col. 2, lines 12-24, col. 3, lines 24-27 and Fig. 1, element x).

7.   As per claim 5, Itoh discloses a disturbance compensation means (Fig. 1,

feedback control loop with cascade compensator configuration) is provided which is

operable to receive an input value relating to at least one other parameter value of the

controlled apparatus, and to receive the error signal, and to produce a compensated

error signal in dependence upon the input value and the error signal, and to supply the

compensated error signal to the filter means or the gain selection means in place of the

error signal (col. 3, lines 8-27). It is inherent that feedback control systems are used to

compensate for disturbances or unwanted inputs of a system (Nise, pg. 350).

8.   As per claim 7, Itoh discloses a method for controlling a controlled apparatus

having a measured operating parameter, the method comprising:

generating an error signal (col. 3, lines 20-27 and Fig. 1, element 6 and x sub. s

- x) from a feedback value (col. 3, lines 20-24 and Fig. 1, element 5) relating to a

measured operating parameter value (col. 3, lines 20-24 and Fig. 1, element 4 and x) of

a controlled apparatus (col. 1, lines 14-18), and a required value (col. 3, lines 24-27

and Fig. 1, element x sub. s) relating to a desired value of the operating parameter of

the controlled apparatus (col. 1, lines 18-23 and col. 3, lines 24-27); and

generating a control signal (col. 3, lines 8-16, col. 5, lines 1-4 and 33-37 and col.

6, lines 4-9) in dependence upon the error signal (col. 3, lines 8-10 and Fig. 1, element

x sub. s- x) and a received gain signal (col. 3, lines 8-10, col. 5, lines 33-37 and col. 6,

lines 4-9), wherein the gain signal is selected in dependence upon the error signal (col.

3, lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9).

The examiner emphasizes that all anticipated components and limitations of

claim 7 are present in Itoh. The controller is operable to receive the error signal (via

Fig. 1, element 6) and gain signal (via the controller) to output a control signal (col. 3,

lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9). The controller via the

controller receives the gain signal in dependence upon the error signal, in which the

two signals (error and gain) are combined to represent the control signal (col. 2, lines

12-24, col. 3, lines 8-67, col. 4, lines 1-6 and col. 5, lines 1-4).

9.   As per claim 8, Itoh discloses the control signal is equivalent to the error signal

multiplied by the gain signal (col. 3-4, equations 1-7).

10.   As per claim 9, Itoh discloses the error signal (Fig. 1, element x sub. s - x) equals

the difference between the required value (Fig. 1, element x sub. s) and the feedback

value (col. 2, lines 12-24, col. 3, lines 24-27 and Fig. 1, element x).

11.   As per claim 11, Itoh discloses a compensated error signal (Fig. 1, element x

sub. s − x) is produced using a disturbance compensation means (Fig. 1, feedback

control loop with cascade compensator configuration) which is operable to receive an

input value relating to at least one other parameter value of the controlled apparatus,

and to receive the error signal, and to produce the compensated error signal in

dependence upon the input value and the error signal, the compensated error signal

being supplied in place of the error signal (col. 3, lines 8-27). It is inherent that

feedback control systems are used to compensate for disturbances or unwanted inputs

of a system (Nise, pg. 350).

12.   As per claim 13, Itoh discloses a gas turbine engine controller including a control

system (col. 1, lines 3-8).

13.   As per claim 14, Itoh discloses a controller (Fig. 1, element 1) wherein the

measured operating parameter is temperature (col. 3, lines 10-16 and col. 4, lines 61-

64).

14.   As per claim 15, Itoh discloses a method of controlling a gas turbine engine (col.

1, lines 3-8).

15.   As per claim 16, Itoh discloses the measured operating parameter is temperature

(col. 3, lines 10-16 and col. 4, lines 61-64).

Claim Rejections - 35 USC § 103

16.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

17.   Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Itoh in view of U.K. Patent No.: 1,135,508 (referred to as hereinafter IBM (International

Business Machines)).

18.   As per claim 4, Itoh does not expressly teach a filter means is provided

which is operable to filter the error signal (Fig. 1, element x sub. s – x) and to supply a

filtered error signal to the gain selection means in place of the error signal.

IBM teaches to a connection between a high pass filter (Fig. 1, element 23) and

the output of a summing device (Fig. 1, element 9), and the high pass filter output to

the amplifier to produce a gain (pg. 4, lines 9-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Itoh to include a connection

between a high pass filter and the output of a summing device, and the high pass filter

output to the amplifier to produce a gain to modify the abrupt nature of change in the

position of a set point to allow the system to respond to the set point change more

gradually (pg. 2, lines 12-20).

19.   As per claim 10, Itoh does not expressly teach the error signal (Fig. 1, element x

sub. s - x) is filtered and a filtered error signal is used to select the gain signal in place

of the error signal.

IBM teaches to a connection between a high pass filter (Fig. 1, element 23) and

the output of a summing device (Fig. 1, element 9), and the high pass filter output to

the amplifier to produce a gain (pg. 4, lines 9-12).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Itoh to include a connection

between a high pass filter and the output of a summing device, and the high pass filter

output to the amplifier to produce a gain to modify the abrupt nature of change in the

position of a set point to allow the system to respond to the set point change more

gradually (pg. 2, lines 12-20).

20.   Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Itoh in view of U.S. Patent No.: 4,349,868 (hereinafter Brown).

21.   As per claim 6, Itoh teaches the disturbance compensation means (Fig. 1,

feedback control loop with cascade compensator configuration) and a multiplier (it is

inherent that Fig. 1, element 1 would include a multiplier for the computation of col. 3-

4, equations 1-7) for receiving a compensation value, and for multiplying the error

signal (Fig. 1, element $x_s - x$) by the compensation value to produce the

compensated error signal (col. 3-4, equations 1-7). It is inherent that feedback control

systems are used to compensate for disturbances or unwanted inputs of a system

(Nise, pg. 350).

Itoh does not expressly teach the disturbance compensation means comprises a

lookup table for receiving the input value, and a multiplier for receiving a compensation

value from the lookup table, and for multiplying the error signal by the compensation

value to produce the compensated error signal.

Brown discloses a look-up table that includes a wide range of values to receive

an input value, and provide an actual gain control function for each input (pg. 2, lines

16-18 and col. 9, lines 59-63).

Therefore, it would have been obvious to a person of ordinary skill in the

art at the time of applicant's invention to modify the teaching of Itoh to include a look-

up table that includes a wide range of values to receive an input value, and provide an

actual gain control function for each input to optimize the control loop (pg. 13, lines 54-

58).

22.   As per claim 12, Itoh teaches the disturbance compensation means (Fig. 1,

feedback control loop with cascade compensator configuration) and a multiplier (it is

inherent that Fig. 1, element 1 would include a multiplier for the computation of col. 3-

4, equations 1-7) for receiving a compensation value, and for multiplying the error

signal (Fig. 1, element x sub. $s - x$) by the compensation value to produce the

compensated error signal (col. 3, equations 1-6). It is inherent that feedback control

systems are used to compensate for disturbances or unwanted inputs of a system

(Nise, pg. 350).

Itoh does not expressly teach the disturbance compensation means comprises a

lookup table for receiving the input value, and a multiplier for receiving a compensation

value from the lookup table, and for multiplying the error signal by the compensation

value to produce the compensated error signal.

Brown discloses a look-up table that includes a wide range of values to receive

an input value, and provide an actual gain control function for each input (pg. 2, lines

16-18 and col. 9, lines 59-63).

Therefore, it would have been obvious to a person of ordinary skill in the art at

the time of applicant's invention to modify the teaching of Itoh to include a look-up

table that includes a wide range of values to receive an input value, and provide an

actual gain control function for each input to optimize the control loop (pg. 13, lines 54-

58).

Response to Arguments

23.   Applicant's arguments, see Remarks pgs. 1-5, filed 15 May 2006 with respect to claims 1-3, 5, 7-9, 11 and 13-16 under U.S.C 102(b) have been fully considered but they are not persuasive.

As per claim 1, applicant argues that the prior art fails to teach, "a controller (4) operable to receive the error signal (e) and a gain signal (k), and to output a control signal (c) in dependence upon the values thereof, wherein a gain selection means (6) is provided, which gain selection means is operable to receive the error signal (e) and to output a gain signal (k) to the controller (4) in dependence upon the value of the error signal (e)."   The examiner respectfully disagrees.

The Itoh reference discloses (col. 3, lines 8-10) "In FIG. 1, a controller 1 receives an error signal, and adjusts and amplifies it to produce an amplified error signal e at its output."; (col. 5, lines 1-4) "In order to improve control accuracy, that is, to decrease the error x. sub. s -x, it may be necessary to increase the open-loop gain of the system, as is apparent from the equation (7)."; (col. 5, lines 33-37) "The valve actuating device 11 receives the output signal of the controller 1 shown in FIG. 1, i.e., an amplified error signal e to actuate the valve device 10 in accordance with the signal e to adjust the valve opening."; and (col. 6, lines 4-9) "In operation, the valve actuating device 10 receives an amplified error signal e from the controller 1 shown in FIG. 1 and moves the

valve head 10c in accordance with the amplified error signal e to set the effective area

A of the opening 10b, that is, to set the degree of valve opening."

24.   In response to applicant's argument that the references fail to show certain

features of applicant's invention, it is noted that the features upon which applicant

relies (i.e., the gain selection means is an external component which outputs a gain

signal to the controller) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read

into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir.

1993).

As per claim 1 and similar language of claim 7, Itoh discloses the "a controller

(Fig. 1, element 1) operable to receive the error signal (col. 3, lines 8-10 and Fig. 1,

element x sub. s - x and a gain signal (col. 3, lines 8-10, col. 5, lines 33-37 and col. 6,

lines 4-9), and to output a control signal in dependence upon the values thereof (col. 3,

lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9), wherein a gain selection

means (col. 3, lines 8-10, col. 5, lines 1-4 and Fig. 1, element 1; the gain selection

means is incorporated in the controller, hence the controller receives the error signal

from Fig. 1, element 6 and the gain signal from the controller via the controller) is

provided, which gain selection means (Fig. 1, element 1) is operable to receive the

error signal (col. 3, lines 8-10 and Fig. 1, element x sub. s - x) and to output a gain

signal (col. 3, lines 8-10, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9) to the

controller (Fig. 1, element 1; the gain selection means is incorporated in the controller,

hence the controller receives the error signal from Fig. 1, element 6 and the gain signal

from the controller via the controller) in dependence upon the value of the error signal

(col. 3, lines 8-16, col. 5, lines 1-4 and 33-37 and col. 6, lines 4-9). "

Furthermore, Itoh discloses (col. 3, lines 8-10) "In FIG. 1, a controller 1 receives

an error signal, and adjusts and amplifies it to produce an amplified error signal e at its

output."; (col. 5, lines 1-4) that "In order to improve control accuracy, that is, to

decrease the error x. sub. s -x, it may be necessary to increase the open-loop gain of

the system, as is apparent from the equation (7)."; (col. 5, lines 33-37) "The valve

actuating device 11 receives the output signal of the controller 1 shown in FIG. 1, i.e.,

an amplified error signal e to actuate the valve device 10 in accordance with the signal

e to adjust the valve opening." and; (col. 6, lines 4-9) "In operation, the valve actuating

device 10 receives an amplified error signal e from the controller 1 shown in FIG. 1 and

moves the valve head 10c in accordance with the amplified error signal e to set the

effective area A of the opening 10b, that is, to set the degree of valve opening."

25.   In response to the applicant's argument regarding "G1, G2, and G3 do not

represent gain signals that can be passed to a controller"; the citation above of Itoh has

been modified to clarify the record. Furthermore, Itoh discloses (col. 5, lines 1-4) that

"In order to improve control accuracy, that is, to decrease the error x. sub. s -x, it may

be necessary to increase the open-loop gain of the system, as is apparent from the

equation (7)."

26.   In response to the applicant's argument, that the prior art fails to teach, "a gain

selection means". The examiner respectfully disagrees.

Itoh discloses (col. 5, lines 1-4) that "In order to improve control accuracy, that

is, to decrease the error x. sub. s -x, it may be necessary to increase the open-loop gain

of the system, as is apparent from the equation (7)."

27.   In response to applicant's argument that the examiner's conclusion of

obviousness is based upon improper hindsight reasoning, it must be recognized that

any judgment on obviousness is in a sense necessarily a reconstruction based upon

hindsight reasoning. But so long as it takes into account only knowledge which was

within the level of ordinary skill at the time the claimed invention was made, and does

not include knowledge gleaned only from the applicant's disclosure, such a

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA

1971).

28.   In response to the applicant's argument, "there is no basis to assume that

controller 1 internally generates and internally receives a gain signal dependent upon

the error signal (x sub. s − x)." The Examiner respectfully disagrees.

       Itoh discloses (col. 3, lines 8-10) "In FIG. 1, a controller 1 receives an error

signal, and adjusts and amplifies it to produce an amplified error signal e at its output."

and (col. 5, lines 1-4) "In order to improve control accuracy, that is, to decrease the

error x. sub. s -x, it may be necessary to increase the open-loop gain of the system, as

is apparent from the equation (7)."

29.   In response to the applicant's argument, that the prior art fails to teach "a

disturbance compensation means (10,12) is provided which is operable to receive an

input value relating to at least one other parameter value of the controlled apparatus,

and to receive the error signal, and to produce a compensated error signal in

dependence upon the input the value and the error signal, and to supply the

compensated error signal to the filter means or the gain selection means (6) in place of

the error signal." The examiner respectfully disagrees.

       As per claim 5 and similar claim language of claim 11, Itoh discloses a

disturbance compensation means (Fig. 1, feedback control loop with cascade

compensator configuration) is provided which is operable to receive an input value

relating to at least one other parameter value of the controlled apparatus, and to

receive the error signal, and to produce a compensated error signal in dependence

upon the input value and the error signal, and to supply the compensated error signal

to the filter means or the gain selection means in place of the error signal (col. 3, lines

8-27). It is inherent that feedback control systems are used to compensate for

disturbances or unwanted inputs of a system (Nise, pg. 350).

Nise discloses (pg. 350), "Feedback control systems are used to compensate for

disturbances or unwanted inputs (i.e. parameter value) that enter a system. The

advantage of using feedback is that, regardless of these disturbances, the system can

be designed to follow the input with small or zero error, as we know demonstrate. Fig.

7.11 shows a feedback control system with a disturbance, D(s) (i.e. secondary

parameter value), injected between the controller and the plant (i.e. engine)."

30.   Applicant's arguments, see Remarks pgs. 5-6, filed 15 May 2006 with respect to

claims 4, 6, 10 and 12 under U.S.C 103(a) have been fully considered but they are not

persuasive.

31.   Claims 4 and 10 stand rejected under 35 U.S.C 103(a) over Itoh in view of IBM

and claims 6 and 12 under 35 U.S.C 103(a) over Itoh in view of Brown.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

The following reference is cited to further show the state of the art with

respect to a control system in which an error generate signal and gain value are used to

control an apparatus.

* U.S. Patent No. 3,535,496 discloses a method of adaptively controlling the gain

of a closed loop system indicative of the systems gain state and disturbances.

* U.K. Patent Application No. 2,229,556 A discloses a control system for a gas

turbine engine.

32.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of

time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of
the advisory action. In no event, however, will the statutory period for reply expire
later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-
3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number
for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR. Status
information for unpublished applications is available through Private PAIR only. For
more information about the PAIR system, see http://pair-direct.uspto.gov. Should you
have questions on access to the Private PAIR system, contact the Electronic Business
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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Knight
Supervisory Patent Examiner
Art Unit 2121

RAMESH PATEL
PRIMARY EXAMINER

For Anthony Knight